Massachusetts Department of Public Health
Massachusetts Immunization Program

MODEL STANDING ORDERS

Measles, Mumps and Rubella (MMR)

Live Virus Vaccine

Note: These model standing orders are current as of April 2004. All standing orders should be reviewed carefully against the most current recommendations and may be revised by the clinician signing them.

At least 1 dose of MMR vaccine is **recommended** for susceptible persons ≥ 12 months of age in the following groups:

- All infants 12 – 15 months of age
- All other susceptible children 12 months – 17 years of age
- Adults ≥ 18 years of age born in or after 1957
- Women of childbearing age (12 – 50 years)
- International travelers born before 1957
- Health care workers born before 1957
- Any contact of a suspected or confirmed case of measles, mumps, or rubella who is without documentation of a second dose of MMR vaccine[1]

2 doses of MMR vaccine are **recommended** for susceptible persons ≥ 12 months of age in the following groups:

- Children 4 – 17 years of age, particularly those entering kindergarten or 7th grade or individuals entering college (regardless of date of birth)
- International travelers born in or after 1957
- Health care workers born in or after 1957
- Teachers and day care staff born in or after 1957
- Any contact of a suspected or confirmed case of measles, mumps, or rubella who is without documentation of any dose of MMR vaccine[1]
- Individuals in other institutional settings born in or after 1957

[1] Measles vaccine given < 72 hours after exposure may prevent or modify measles disease.

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ORDER:

1. Provide patient, or patient's parent or legal representative, with a copy of the Vaccine Information Statement (VIS) and answer any questions.

2. Screen for contraindications (Table 1).

   For women of reproductive age (12-50 years of age):
   - document pregnancy status;
   - explain the theoretical risks to those not pregnant and advise her not to get pregnant for $\geq$ 4 weeks;
   - it is sufficient to ask a woman if she is pregnant; a pregnancy test is **not** necessary;
   - optional, additional documentation may include date of last menstrual period and/or method of birth control, if any.

3. Administer MMR vaccine, 0.5 ml subcutaneously (SC) in the anterolateral aspect of the thigh or the upper outer triceps area by injecting the needle at a 45^{o} angle in a pinched-up fold of skin and SC tissue. Use a 5/8- to ¾-inch, 23- to 25-gauge needle. Follow the recommended schedule (see Table 2.) **Always check the package insert prior to the administration of any vaccine.**
4. Give MMR vaccine simultaneously with all other live or killed immunizations according to the recommended schedule and patient's current vaccine status. (For additional information on simultaneous administration of MMR vaccine, please refer to Table 2.)
5. If possible, patients should be observed for allergic reactions for 15-20 minutes after receiving immunization.

6. Facilities and personnel should be available for treating immediate hypersensitivity reactions.

7. Report clinically significant adverse events to the Vaccine Adverse Event Reporting System (VAERS) at 1-800-822-7967, or via the VAERS website: www.vaers.org.
8. See the MIP document *General Protocols for Standing Orders* for further recommendations and requirements regarding vaccine administration, documentation and consent.

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Table 1. Contraindications and Precautions to MMR Vaccine

Valid Contraindications and Precautions to MMR Vaccine	Invalid Contraindications (MMR Vaccine should be given)
Anaphylactic reactions to a previous dose of MMR vaccine, gelatin, neomycin, or to any other component of the vaccine (see package insert for specific components)	Mild illness with or without low-grade fever
	Non-anaphylactic reactions to any component of the vaccine
Known severe immunodeficiency in the recipient, including: hematologic and solid tumors; congenital immunodeficiency; blood dyscrasias; leukemia; lymphoma; other malignancies; humoral immune deficiencies, cellular immune deficiencies (including HIV infection with immunosuppression[2]); and long-term immunosuppressive therapy[3]	Local reaction to previous dose of MMR vaccine
	Anaphylactic reaction to eggs[1]
	Asymptomatic or mildly symptomatic HIV infection without severe immunosuppression[4]
High-dose steroid therapy daily or on alternate days for ≥ 14 days (≥ 2 mg/kg/day or ≥ 20 mg/day of prednisone) [5] (For additional information on steroids, see Table 3.)	• Low-dose or moderate-dose steroid therapy daily or on alternate days for < 14 days (< 2 mg/kg /day or < 20 mg/day prednisone) • Physiologic maintenance doses of steroids (For additional information on steroids, see Table 3.)
Active untreated tuberculosis[6]	Simultaneous TB skin testing[7]
Pregnancy[8] (It is sufficient to ask a woman if she is pregnant; a pregnancy test is not necessary.)	TB or positive PPD (on treatment)[6]
Precautions to MMR Vaccine : • Moderate or severe illness with or without fever (temporary precaution) • Recent (≤ 11 months) receipt of an immunoglobulin (IG)-containing blood product (see Table 4 for suggested intervals between MMR and IG-containing preparations) • High-dose systemic steroids daily or on alternate days for < 14 days (< 2 mg/kg/day or < 20 mg/day prednisone)[9] • Topical, aerosol, or local injection steroids[10] (For additional information steroids, see Table 3.) • Past history of thrombocytopenia; or an episode of throbocytopenia ≤ 8 weeks of a previous dose of MMR vaccine	Immunodeficient family member or household contact
	Pregnancy in recipient's mother or other close or household contact
	Breast-feeding
	Recipient is child-bearing-age female
	(Footnotes on next page)

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Footnotes for Table 1. MMR Contraindications and Precautions

[1] Hypersensitivity to eggs is **not** a contraindication per the American Academy of Pediatrics (AAP) and Advisory Committee on Immunization Practices (ACIP). Recent data have demonstrated the safety of MMR vaccine, even in those with a history of egg anaphylaxis. Skin testing is not predictive and not recommended in persons with a history of egg allergy.

[2] Measles-containing vaccines should NOT be given to those with symptomatic HIV infection **and** severe immunosuppression, as outlined below:

	Age			
CD4 + Criteria	< 12 months	1-5 years	6-12 years	≥ 13 years
Total CD4 + T-lymphocytes **or** CD4 + T-lymphocytes (as % of total lymphocytes	< 750/ uL **or** < 15%	< 500/ uL **or** <15%	< 200/ uL **or** <15%	< 200/ uL **or** <14%

However, measles vaccine should be **considered** for those with symptomatic HIV infection **without** immunosuppression (see footnote No. 4 below.)

[3] After the cessation of chemotherapy and other immunosuppressive therapy, MMR vaccine should be deferred for ≥ 3 months, with the exception of corticosteroid therapy. (See footnotes No. 5, 9 and 10 below. For additional information on steroids see Table 3.)

[4] ACIP and AAP continue to recommend routine MMR vaccination for asymptomatic HIV-infected persons without evidence of severe immunosuppression (as defined above in footnote No. 2) who do not have documentation of measles immunity.

[5] For patients on high dose, long-term steroids, MMR vaccine should be deferred for ≥ 1 month post-treatment. (See Table 3.)

[6] A theoretical basis exists for concern that MMR vaccine (like varicella vaccine) might exacerbate tuberculosis. Consequently, before administering MMR vaccine to persons with untreated active tuberculosis, initiating antituberculosis therapy is advisable.

[7] Although no data is available, it is possible that MMR vaccination (like varicella vaccination) may temporarily suppress tuberculin reactivity. If TB testing cannot be done on the day of MMR vaccination, it should be postponed for ≥ 4 weeks.

[8] Non-pregnant women should avoid pregnancy for ≥ 4 weeks post vaccination.

[9] Patients receiving high dose, short-term steroids can receive live virus vaccines immediately after discontinuation of treatment. However, some experts advise waiting until ≥ 2 weeks after cessation of therapy, if possible (e.g., if the patient's condition allows temporary cessation). (See Table 3.)

[10] MMR vaccine can be given to patients receiving steroids by topical, aerosol, or local injection. However, if therapy is prolonged and there is any clinical or laboratory evidence of immunosuppression, MMR vaccine should be deferred for ≥ 1 month post treatment. (See Table 3.)

[11] In most instances, the benefits of vaccination will be much greater than the risks and will justify giving MMR vaccine, particularly in view of the greater risk of thrombocytopenia following measles or rubella disease. However, if the episode of thrombocytopenia occurred near the time of vaccination, it might be prudent to avoid a subsequent dose.

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Table 2. MMR Schedule

Dose	Recommended Age	Accelerated Schedule
1	12-15 months	≥ 12 months of age
2	Entry into kindergarten or 7th grade or college	≥ 1 month after the 1st dose

Notes:

- Timing of administration of MMR and other live vaccines:
  1) MMR vaccine and varicella vaccine not administered on the same day should be given ≥ 4 weeks apart.
  2) MMR vaccine and smallpox vaccine can be given on the same day, but it may be prudent to avoid simultaneous administration. If not given on the same day, they should be given ≥ 4 weeks apart.
  3) Live oral vaccines (Ty21a typhoid vaccine, oral polio vaccine) and MMR can be given at any time before, with or after each other. Also, single-antigen measles and yellow fever vaccine can be given at any interval.

- MMR vaccine and immune globulin (IG)-containing blood products:
  IG-containing blood products can diminish the antibody response to MMR vaccine.
  - Simultaneous administration: Do not give IG-containing blood products and MMR simultaneously. If unavoidable, give at different sites and revaccinate or test for seroconversion after the recommended interval. For rubella and mumps vaccines, this interval is ≥ 3 months; the interval for measles-containing vaccines is dose-related and can range from 3 – 11 months. (See Table 4)
  - If MMR is given first: Defer IG for ≥ 2 weeks.
  - If IG is given first: The interval between IG and MMR vaccination depends on the product, the dose, and the indication. (See Table 4)

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Table 3. Guidelines for Administration of Live Virus Vaccines and Steroid Therapy *

Steroid Therapy	Recommendations for Deferral
High dose systemic steroids daily or on alternate days for ≥ 14 days (≥ 2mg/kg QD or ≥ 20 mg QD if weight >10kg of prednisone)	Defer live virus vaccines for ≥ 1 month after treatment has stopped.
High dose systemic steroids daily or on alternate days for < 14 days (≥ 2 mg/kg QD or ≥ 20 mg QD if weight >10kg prednisone)	Can give live virus vaccines immediately after treatment is discontinued. However, some experts recommend deferring until ≥ 2 weeks after treatment has stopped, if possible.
Low or moderate doses of systemic steroids given daily or on alternate days (< 2 mg/kg QD or < 20 mg QD if weight >10kg of prednisone)	Can give live virus vaccines on treatment.
Physiologic maintenance doses of steroid (replacement therapy)	Can give live virus vaccines on treatment.
Topical, aerosol or local injections of steroids (e.g., skin, aerosol, eyes, intra-articular, bursal, tendon injections)	Can give live virus vaccines on treatment. However, if this therapy is prolonged and there is any clinical or laboratory evidence of immunosuppression, defer for ≥ 1 month after treatment has stopped.
Individuals with a disease which in itself is considered to suppress the immune response and who are receiving systemic or locally acting steroids	Should not give live virus vaccines, except in special circumstances.

* Steroid therapy is **not** a contraindication for administration of **killed** vaccines.

Adapted from : American Academy of Pediatrics. Immunization in Special Clinical Circumstances. In: Pickering LK, ed. *Red Book: 2003 Report of the Committee on Infectious Diseases*. 26th ed. p. 74-75.

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Table 4. Suggested Intervals between Administration of Immunoglobulin Preparations and Measles-Containing and Varicella Vaccines

Product/Indication	Dose, including mg immunoglobulin G (IgG)/kg body weight[1]	Recommended interval before measles or varicella vaccination (months)
Respiratory syncytial virus immune globulin (IG) monoclonal antibody (Synagis™)	15 mg/kg intramuscularly (IM)	None
Tetanus IG	250 units (10 mg IgG/kg) IM	3
Hepatitis A IG		
Contact prophylaxis or international travel < 3 mos	0.02 mL/kg (3.3 mg IgG/kg) IM	3
International travel 3 – 5 mos	0.06 mL/kg (10 mg IgG/kg) IM	3
Hepatitis B IG	0.06 mL/kg (10 mg IgG/kg) IM	3
Rabies IG	20 IU/kg (22 mg IgG/kg) IM	4
Varicella IG	125 units/10 kg (20-40 mg IgG/kg) IM, maximum 625 units	5
Measles prophylaxis IG		
Standard (i.e., nonimmunocompromised) contact	0.25 mL/kg (40 mg IgG/kg) IM	5
Immunocompromised contact	0.50 mL/kg (80 mg IgG/kg) IM	6
Blood transfusion		
Red blood cells (RBCs), washed	10 mL/kg negligible IgG/kg intravenously (IV)	None
RBCs, adenine-saline added	10 mL/kg (10 mg IgG/kg) IV	3
Packed RBCs (hematocrit 65%)	10 mL/kg (60 mg IgG/kg) IV	6
Whole blood (hematocrit 35%-50%)	10 mL/kg (80-100 mg IgG/kg) IV	6
Plasma/platelet products	10 mL/kg (160 mg IgG/kg) IV	7
Cytomegalovirus intravenous immune globulin (IGIV)	150 mg/kg maximum IV	6
Respiratory syncytial virus prophylaxis IGIV	750 mg/kg IV	9
IGIV		
Replacement therapy for immune deficiencies	300-400 mg/kg IV	8
Immune thrombocytopenic purpura	400 mg/kg IV	8
Immune thrombocytopenic purpura	1,000 mg/kg IV	10
Kawasaki disease	2 grams/kg IV	11

Note on other live vaccines: Blood and other antibody-containing products (except washed red blood cells) can also diminish the response to rubella vaccine, and potentially to mumps vaccine. Therefore, after immune globulin preparations or other antibody-containing products are received, mumps and rubella vaccines should be deferred for ≥ 3 months. If RSV-IGIV is given, mumps, rubella and varicella vaccines should be deferred for ≥ 9 months. If RSV-IM is given, no deferral is needed for any live virus vaccines.

Adapted from: CDC. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Family Physicians (AAFP). MMWR 2002; 51 (No. RR-2):7.

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